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Chilton's food engineering

November 1982

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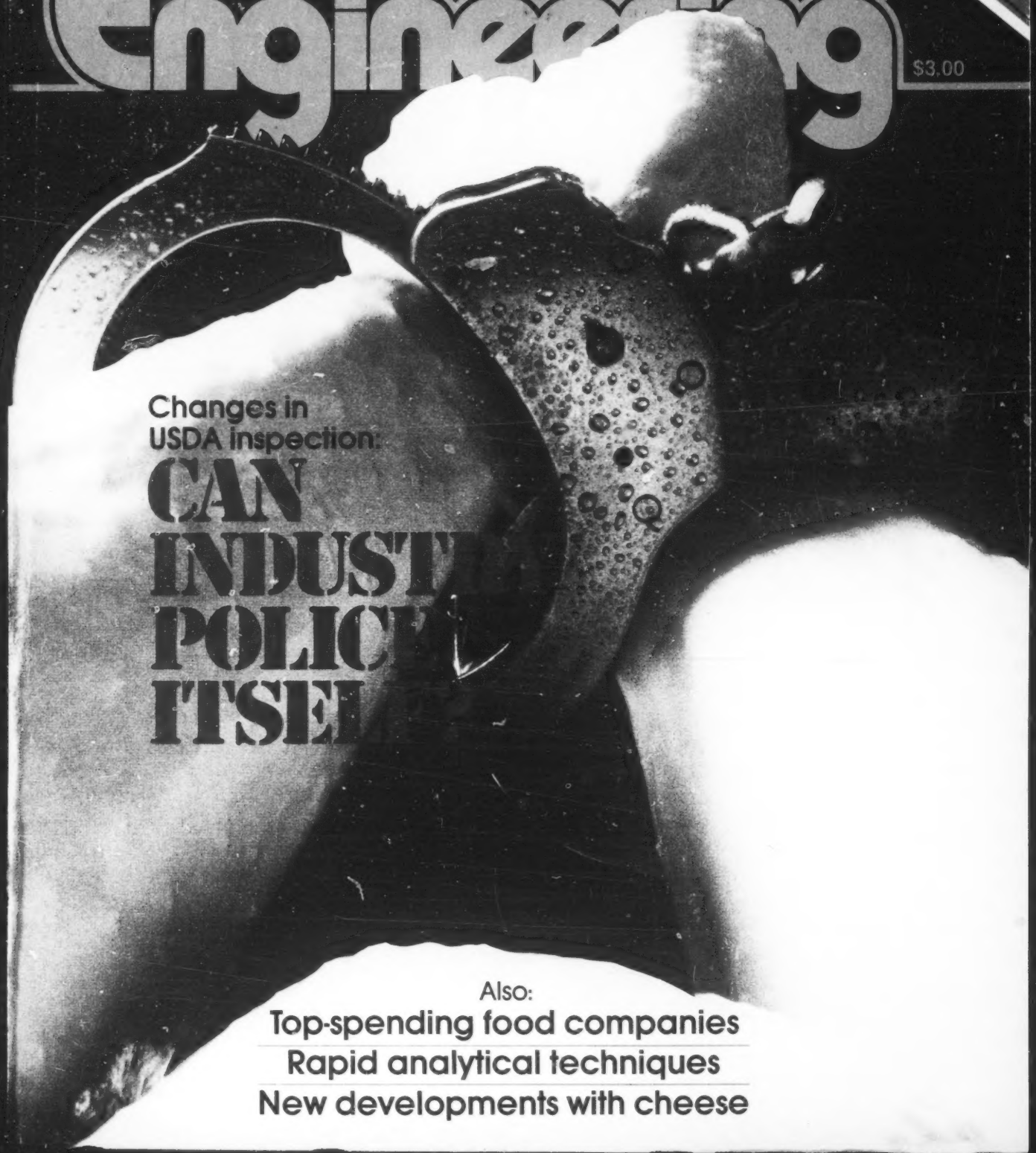
ENGINEERED FOODS



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TOP-SPENDING COMPANIES: Capital expenditures for the top 50 food companies are listed and analyzed in this special report. Overall, food company spending is up 6.6% from last year.

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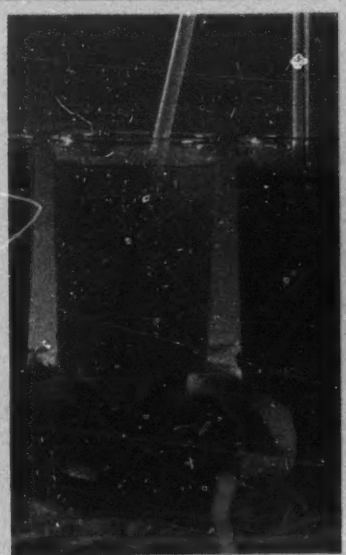

STABLE FLAVORS: Improved technology has made possible a line of very stable encapsulated essential oils and flavor chemicals.

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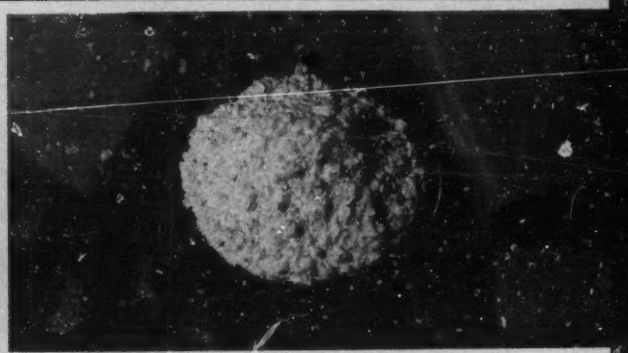

NEW DEVELOPMENTS WITH CHEESE: Four separate articles in this issue address this topic: (1) A new cheese preservative—**page 60;** (2) A cheese concentrate that gives better cheese flavor with less cheese—**page 64;** (3) A new cheese powder that bounces back, on rehydration, to provide "stretchiness;"—**page 53** (4) A comparison of techniques to determine the amount of salt in cheese—**page 83.**

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Events

Is FDA "going soft"?

Declines in enforcement statistics are not necessarily the result of laxity, the agency retorts.

Top Food and Drug Administration officials have gone on the defensive recently in an effort to throw cold water on a smoldering issue that could prove very harmful to the agency and the Reagan administration's efforts towards regulatory reform if it should flare up in the general media.

Earlier this year a consumerist health group in Washington, the Health Research Group, issued an analysis of recent FDA legal actions and found that they had decreased 45 percent from the average level of the past four years. In July, HRG sent another report to Representative Dingell, who is influential in the health area, which purported to show a further decrease — to 66.4 percent — for the current six-month period when compared with the same period for the years 1977 through 1980.

HRG claims that these figures show that the agency is "getting soft" on the industries it is supposed to be scrutinizing, and that, furthermore, consumers are less safe now than they were 18 months ago, and that FDA had entered into a "corrupt partnership" with industry. Dingell promised to look into the charges, and although hearings have not been called for, the agency is now trying to quell such a possibility by going public with its own interpretation of what it admits are declines in some indexes of enforcement in the last 18 months.

In major speeches recently both FDA Commissioner Arthur Hull Hayes, Jr., and agency Chief Counsel Thomas Scarlett, came down hard on HRG's interpretation of FDA enforcement figures. Said Scarlett to a meeting of the Regulatory Affairs Professional Society in September:

"The major flaw in HRG's argument is that although the enforcement statistics are down, it does not logically follow that consumer protection has suffered.

MEL SELIGSOHN, News Editor

The enforcement indicators do not directly measure the amount of consumer protection FDA's regulatory system provides; they merely provide a census of some of the more readily enumerated compliance techniques available to the agency.

"Whether the statistics provide an accurate indirect measure of FDA's effectiveness is a question that HRG has made no attempt to answer. Clearly, the statistics are relevant and their significance must be evaluated. Equally clearly, however, it is misleading to promote them as a complete picture of FDA's commitment to achieving compliance with the law, for they leave out far too much. They leave out, for example, the fact that FDA has recently conducted over 300,000 audit checks in a major Class I recall."

Regulatory reform is not "deregulation"

In his response to the HRG charges, FDA Commissioner Hayes told a meeting of the Health Industry Manufacturers Association meeting this fall, "It is worth pointing out that compliance numbers are not the be-all and end-all as an index of consumer safety. But the numbers themselves are not the main point at issue. For HRG has gone beyond the numbers to cite what it claims are examples of FDA's 'partnership' with industry. The implication is that this partnership works against the best interests of the public.

"That is a charge I absolutely deny . . . To argue that these enforcement figures necessarily mean decreased consumer safety presents what I view as a serious conceptual problem. To do so, it seems to me, is analogous to observing that a decrease in traffic tickets automatically means that more traffic violations are going undetected. It is equally plausible — and perhaps more compelling — to conclude that a decrease in traffic tickets means that compliance with the law is increasing.

"That logical objection aside, however, the question of how to interpret these numbers can be examined from a number of perspectives. Let me outline several that make sense to me. The burden of the argument HRG makes is that FDA has become a paper tiger. That it deliberately entered into an inappropriate partnership with industry. This argument, I believe, is seriously flawed. In practical terms alone there exists no reason for FDA to grow soft on enforcement. I know of no constituency anywhere — including industry — that opposes enforcement of laws designed to protect the safety of the American public and the integrity of the marketplace . . .

"Another drawback is more telling. If HRG were correct that FDA has grown lax on enforcement, we would expect the criminal referrals would provide a major target for cutbacks. No such cutback has occurred. So far in fiscal year 1982, FDA has referred 18 criminal cases to U.S. attorneys' offices. This compares with a range of 22 to 32 annually during the four-year baseline period. Even were we to assume the referral of no more prosecutions this year, the figure to date represents an insignificant difference in criminal referrals."

(Continued on next page)

Events

FDA Soft? . . .

Saying that the decline in some indexes of enforcement recently "may be temporary or part of a long trend—or a little of both," FDA officials noted these long term developments that are now impacting on statistics on enforcement actions:

1. *There has been an emphasis on cooperative approaches to compliance.* Citizen Advisory Committees in 1955 and 1962 said greater emphasis should be placed on cooperative approaches to obtain compliance. In the 1955-65 administration of the last career inspector to be raised to FDA Commissioner, George P. Larrick began emphasizing education and voluntary actions. His successors seemed to emphasize the change even more, being brought in to head FDA, rather than being people with an FDA enforcement background.

In a 1967 speech, the first physician to be Commissioner in 45 years, Dr. James Goddard, said, "Promoting compliance in products and labeling is the primary goal whether accomplished by research, educational activities or enforcement proceedings. . . . Increased emphasis on administrative sanctions rather than on enforcement by court actions stems from the kind of problems which now confront FDA."

The current administrator, Dr. Hayes, believes very strongly in voluntarism, saying that it can often produce results faster and at less cost. "I believe in increased cooperation and dialogue between FDA and all interested parties to resolve public health issues of mutual concern. This principle may seem obvious, but it lies at the heart of what I'm trying to achieve. This is the sense in which I intend government to form a partnership with other constituencies—to work together to protect and promote the public health. FDA's current sodium initiative offers an excellent example of the sort of mutual effort I have in mind," Dr. Hayes asserted recently.

Cooperation is replacing regulation

Starting in FY 1982, FDA's field organization began a voluntary correction reporting system. For the first six months, a total of 2,466 voluntary corrections were verified; in 502 cases, the voluntary correction action involved destruction of product — negating, in some cases, the need to seize or enjoin.

2. *Violations—the "crime rate"—may be down.* As part of the emphasis on cooperative action, FDA has put forth a variety of regulations and standards that make clear what processors must do to comply with the law, and that thereby make compliance more likely without frequent enforcement action.

Among these are Good Manufacturing Practice Regulations (GMPs). Overall compliance in inspections of the food industry has increased from about 78 percent in 1975 to about 90 percent in 1981. Warehousing has improved partly as a result of a program of workshops FDA has held for some warehouse operators. Inspectors today find violations in slightly less than 10 percent of the warehouses inspected, compared with 60 percent a decade ago.

3. *The food industry and other regulated industries have changed.* For example, 25 years ago a single inspector might check several different breweries owned by different companies. Today a few national companies dominate the industry, maintaining full-time quality control staffs utilizing computerized practices much different from those of the past.

Short-term factors

1. Enforcement statistics are influenced by emergencies. Major recalls in the early 1970's diverted manpower from inspections or other enforcement activities. Similarly, while the number of recalls was down in early fiscal 1982, one of those was one of the most complex and largest in FDA history—the Alaska canned salmon recall. This required the diversion of personnel from inspections and other activities in order to participate in 312,000 audit checks of retail outlets.

2. The number of field investigators-inspectors has declined from 1,182 four years ago in fiscal 1978 to 903 in fiscal 1982, as part of an overall trimming of FDA and the federal government in general under the Reagan and Carter administrations. This reduction was

(Continued on page 25)

FDA Enforcement Actions *(fiscal years 1977/82)*

1977	1978	% change	1979	% change	1980	% change	1981	% change	1982	% change
Prosecutions										
32	21	−28	21	—	22	−5	18	−14	18*	—
Injunctions										
40	32	−20	30	−6	21	−30	13	−38	11*	−15
Seizures										
530	402	−24	541	+35	539	−.4	276	−49	165*	−40
Recalls										
888	1,116	+26	1,290	416	864	−33	658	−24	554*	−16
Regulatory Letters										
395	422	+7	361	−15	783	+117	198	−75	114*	−42
Inspections										
30,401	28,760	−5	32,787	+14	32,778	—	36,258	+11	21,588**	−41

FDA officials are busy explaining the general decline in enforcement actions.

NOTE: *FY begins 10/1*

**to 8/15 **to 6/15*

FDA . . .

sharpest in 1979.

3. Implementation of the Civil Service Reform Act in 1978 may have introduced uncertainties respecting the priorities assigned to different types of enforcement activities. FDA is examining approaches to deal with any misunderstanding that may exist as a result of recent managerial initiatives aimed at promoting the most efficient allocation of investigatory and enforcement resources.

Some trends are steady or up:

- Total recalls in 1982 should be higher than 1981, if present trends continue;
- Inspections were higher in 1981 than in any of the previous five years;
- Prosecutions reached 18 in the first 10½ months of fiscal 1982, and this could easily provide a year at the average of recent years. Moreover, the cases tend to be of greater significance and complexity than in some past instances, according to the Office of the General Counsel.
- Import detentions remain high.

Economic crackdown

Along with explaining its record to the public and potentially hostile lawmakers, FDA has embarked on some new programs aimed at shoring up its obviously strained posture of vigilance in the food area. The most dramatic of these is a pilot economic crackdown program on short weights and product substitution.

Times of economic stress, such as the current recession, tend to breed more violations of this nature than usual. Consequently, FDA has ordered its District Offices "to take quick, aggressive legal action" when economically deceptive practices are uncovered. A number of such actions involving short weights and substitution are already in the works.

Economic crackdown is underway

The pilot project has District Offices concentrating on eight products. Products being surveyed for net weight violations are: Instant tea, instant coffee, spices, chocolate products and nuts. Analyses of breaded shrimp for excess breading; apple juice for substitution with water and/or added sweeteners; and olive and sesame oils for substitution with corn and/or cottonseed oil have also been ordered by the agency.

FDA pointed out because the agency has not given economic work the highest priority and because of current economic conditions, "There is concern that economic cheats may be more prevalent than usual. . . . The outcome of this pilot survey is expected to have a significant impact on the future direction of our efforts and the level of resources the FDA will devote to the problem of economic deceptive practices."

One FDA official has suggested that economic pressures have also resulted in food firms' reducing the amount of attention paid to the inspection of packages, which has resulted in defects that have led to massive food recalls. Dr. Robert M. Schaffner, FDA's Associate Director for Physical Sciences, recently told the Glass Packaging Institute that the last 20 years has seen that industry reduce its customer services.

"I think any will have to admit that there are fewer manpower hours devoted to this activity than there were in the 50's and 60's. The container producer and the food manufacturer have had considerable economic pressure to reduce the cost of these containers and technical services are part of the cost of the container," he stated.

Although conceding that the industry's record is good, and that many of the problems related to glass-packed food were probably due to processing errors or sanitation problems, Schaffner urged the industry not to reduce technical services "to the point where your staffs are no longer vigilant in protecting the public health."

Schaffner also urged the industry to expand its research and development, noting the recent improvements in mechanical, electronic, sonic, magnetic and light distorting instruments now used to eliminate glass particle contamination from containers and food filling operations.

"Perhaps your industry might develop some method of jar sterilization not unlike the peroxide applications that have been used for laminated foil-plastic packages. Then these sterilized containers could be aseptically filled with presterilized foods. If the food industry through your development had such a new tool, they could offer the public a really improved food with greater eye appeal, fresh-like flavor and improved nutrition. All of this would be packages of container integrity and safety," he concluded.

Aware that charges of "softness" in the regulatory area could reflect poorly on current administration philosophy, FDA officials are busy explaining that regulatory reform by no means is the same thing as "deregulation." "This administration is not committed to the root-and-branch eradication of government," says Tom Scarlett. "What the administration intends to achieve is not the elimination of regulation but the limitation or regulation to those areas in which it is genuinely necessary and, within those areas, to assure the regulation reflects an appropriate balance between the attainment of the regulation's purpose and the costs of the regulation imposed."

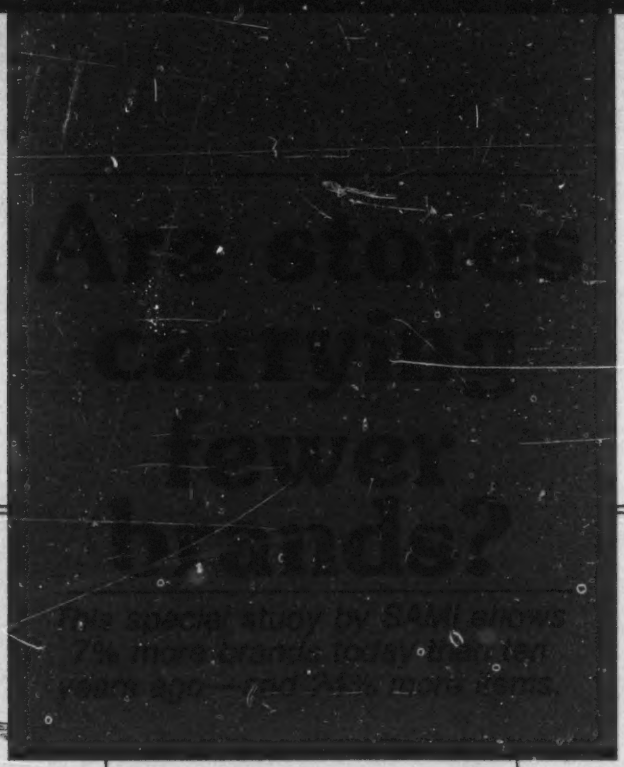
More R & D is needed

According to Scarlett, the basic principles of regulatory reform that underpin the administration's current approach are: (1) trust in the integrity of the private sector and confidence that in most instances it can be relied on to safeguard the interests of consumers; (2) confidence that consumers can usually make appropriate decisions concerning their own interests provided they are informed about available choices; (3) where private sector forces do not adequately deal with a problem, and if that problem is sufficient to justify government intervention, the government will take appropriate regulatory action.

"Accordingly, while the government stands ready to relinquish some of the responsibility it has increasingly claimed and to grant a more important role to industry initiatives and consumer education, nothing in the philosophy of regulatory reform requires it to abandon the fundamental public health mission embodied in laws such as the Federal Food, Drug and Cosmetic Act," asserted Scarlett.

Scarlett pointed out that in the case of food regulation, FDA is examining ways of achieving public health protection consistent with the goal of regulatory reform. Earlier this year, for instance, FDA proposed to adopt a risk assessment policy for carcinogenic constituents of food and color additives.

"Enforcement is what happens when something goes wrong with the social contract between FDA and the private sector," Scarlett concluded. FE



Are stores carrying fewer brands?

This special study by SAMI shows 7% more brands today than ten years ago—and 24% more items.

In recent months there has been considerable conjecture as to whether shelf space limitations triggered by increased penetration of private label and generic label brands might have caused a reduction in the number of brands and items being carried in food stores.

In order to shed some light on this hypothesis, SAMI prepared a special study comparing ten-year trends in the number of brands and items in 70 selected high-volume categories (food and non-food) appearing in the SAMI system as of June 1982, compared with February 1972.

SAMI recognizes that in February 1972 there were 26 markets in its system as compared with 45 today. "Undoubtedly there are a certain number of local brands and items which have entered our reporting system as our expansion into new markets has progressed," says SAMI. "However, we believe that this study offers strong evidence that there has not been any noteworthy attrition in the number of brands and items being offered to food stores."

Ten Year Comparison of Number of Items

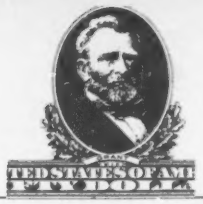
CATEGORY	Items 1972	Items 1982	Change '82 vs. '72	Change
Ready-To-Eat Cereal	623	940	+ 317	+ 50.9%
Regular Coffee	671	773	+ 102	+ 15.2
Dry Dog Food	468	970	+ 502	+107.3
Instant Coffee	360	417	+ 57	+ 15.8
Canned Tuna	314	433	+ 119	+ 37.9
Canned Soup	638	886	+ 248	+ 38.9
Cooking & Salad Oils	576	683	+ 107	+ 18.6
Wet Dog Food	719	834	+ 115	+ 16.0
Pasta	2,623	3,008	+ 385	+ 14.7
Single Strength Juice	872	908	+ 36	+ 4.1
Wet Cat Food	611	743	+ 132	+ 21.6
Soft Drink Mixes	729	906	+ 177	+ 24.3
Pourable Salad Dressings	670	946	+ 276	+ 41.2
Mayonnaise	134	155	+ 21	+ 15.7
Spices & Seasonings	2,996	4,836	+1,840	+ 61.4
Italian Food Sauces	390	569	+ 179	+ 45.9
Dry Cat Food	104	250	+ 146	+ 40.4
Jams, Jellies, Preserves	3,112	2,464	− 648	− 20.8
Pickles	2,801	2,463	− 338	− 12.1
Pork & Beans	345	343	− 2	− .6
Dry Pkg. Dinners	233	298	+ 65	+ 27.9
Apple Juice	218	430	+ 212	+ 97.2
Canned Corn	328	331	+ 3	+ .9
Frozen O.J.	183	215	+ 32	+ 17.5
Frozen Pizza	520	972	+ 452	+ 86.9
Frozen Fish	2,221	1,986	− 235	− 10.6
Frozen Potatoes	886	689	− 197	− 22.2
Frozen Reg. Dinners	300	399	+ 99	+ 33.0
Frozen Corn	184	172	− 12	− 6.5
Frozen Mexican Food	229	896	+ 667	+291.3

Source: *SAMI*

Ten Year Comparison of Number of Brands

CATEGORY	Brands 1972	Brands 1982	Change '82 vs. '72	Change
Ready-To-Eat Cereal	186	219	+33	+ 17.7%
Regular Coffee	88	91	+ 3	+ 3.4
Dry Dog Food	82	154	+72	+ 87.8
Instant Coffee	70	76	+ 6	+ 8.6
Canned Tuna	74	63	−11	− 14.9
Canned Soup	83	87	+ 4	+ 4.8
Cooking & Salad Oils	131	143	+12	+ 9.2
Wet Dog Food	153	105	−48	− 31.4
Pasta	104	123	+19	+ 18.3
Single Strength Juice	122	115	− 7	− 5.7
Wet Cat Food	85	64	−21	− 24.7
Soft Drink Mixes	61	74	+13	+ 21.3
Pourable Salad Dressings	81	88	+ 7	+ 8.6
Mayonnaise	48	53	+ 5	+ 10.4
Spices & Seasonings	117	194	+77	+ 65.8
Italian Food Sauces	72	100	+28	+ 38.9
Dry Cat Food	11	45	+34	+209.1
Jams, Jellies, Preserves	151	123	−28	− 18.5
Pickles	216	126	−90	− 41.7
Pork & Beans	79	68	−11	− 13.9
Dry Pkg. Dinners	36	52	+16	+ 44.4
Apple Juice	64	95	+31	+ 48.4
Canned Corn	88	85	− 3	− 3.4
Frozen O.J.	62	50	− 8	− 12.9
Frozen Pizza	86	107	+21	+ 24.4
Frozen Fish	251	203	−48	− 19.1
Frozen Potatoes	141	89	−52	− 36.9
Frozen Reg. Dinners	48	41	− 7	− 14.6
Frozen Mexican Food	48	110	+62	+ 29.2
Frozen Corn	63	46	−17	− 27.0

Source: *SAMI*



Top-spending food companies

Overall, capital spending increased 6.6 percent last year. Here's what the top 50 firms did in FE's fourth annual survey.

The food industry's capital spending programs are showing much more zip than those of other American industries, although spending growth is far from exuberant. This is the main finding of this year's fourth annual *Food Engineering* survey of expenditures for new plants and equipment by major manufacturing firms, companies with dominant food-processing segments, and conglomerates with large food segments within their realms of operation.

Capital expenditures figures for the top 50 companies ranked here show a 6.6 percent increase in 1981 over 1980—from $5.1 billion to about $5.4 billion. The previous year, 1979, showed a total of $4.3 billion. The increase from 1970 to 1980 was a healthy 16.3 percent, or about 10 percent more than last year's increase.

With inflation factored in, however, 1981 capital spending programs appear to have held steady. Conservative as this may seem, capital spending in the food industry is robust compared to the rest of the economy. According to recent figures, business spending on plant and equipment adjusted for inflation has actually declined 3 percent from its peak in 1981. Lower interest rates will help in the months ahead, but unless the general economy improves—along with corporate cash flows—the doldrums in capital spending is likely to stretch out into 1983.

Will the food industry continue to outpace other major industries in capital spending? Last year was a good one for industry profits, which were up 10.9 percent compared with 1980, and sales were up 10.2 percent. Such strength should reach out through this year and next. As long as this is the case, food companies will spend on plant and equipment, while keeping a cautious eye on the economy as a whole.

The top 10 spenders in the industry expended $2.9-billion last year, or 53.7 percent of the total; in 1980 they spent $2.0-billion or 39.2 percent of the total for that year. As in the previous two years, Anheuser-Busch was the industry's top spending company, although its total investment dropped $169-million to $421-million.

Second place this year was taken by Archer-Daniels-Midland, which was 7th in 1981. This aggressive firm is investing heavily in cottonseed oil processing facilities. A. E. Staley leaped into 5th place from 19th the previous year. Staley is expanding its Morrisville, Pa., HFCS plant and purchased a large plant for the production of soluble soy protein concentrate.

Nabisco and Ralston Purina are also new to the top 10 segment of the list this year. Ralston is upgrading its tuna fleet and processing capabilities, while Nabisco is making heavy investments in its international facilities. FE

MEL SELIGSOHN, News Editor

All figures are in thousands-of-dollars

1 ANHEUSER-BUSCH
St. Louis, Mo.

	1981	1980	% Change
Capital Expenditures	421,300	590,000	−28.6
Net Sales	4,409,600	3,822,400	15.4
Net Earnings	217,400	171,800	26.6
Cash Dividends Paid	51,200	44,800	12.1

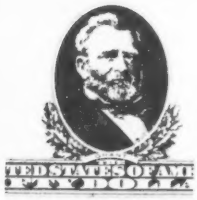
Tripled the capacity of the Los Angeles Brewery and continued modification of the Baldwinsville, N.Y. Brewery as part of a program to increase capacity from 54.5 million barrels to 70 million barrels by the mid-1980's.

2 ARCHER-DANIELS-MIDLAND
Decatur, Ill.

	1981	1980	% Change
Capital Expenditures	368,206	186,461	97.9
Net Sales	3,647,491	2,802,011	30.2
Net Earnings	175,981	115,958	51.8
Cash Dividends Paid	8,440	7,264	16.3

Expansion of wet corn milling capacity completed at Decatur, IL, Cedar Rapids, IA, and remodeled Peoria, IL plants; completion of new flour mill in Hudson, NY and expansion of Centennial Mills on the West Coast; new cottonseed refinery begun in Little Rock, AR; expanded capacity at Lincoln, NE processing plant.

**Food segments only **FE estimate for food segments*



Top-Spending Food Companies . . .

All figures are in thousands-of-dollars

3 COCA-COLA Atlanta, Ga.

	1981	1980	% Change
Capital Expenditures	**329,606**	**293,071**	**12.5**
Net Sales	5,889,000	5,620,700	4.8
Net Earnings	481,000	422,100	14.1
Cash Dividends Paid	286,787	266,928	7.5

Capital expenditures went for the purchase of the Atlanta Coca-Cola Bottling Co., the construction of the Atlanta corporate office complex, major expansion of Taylor wine production facilities in California, and a new chilled juice plant completed in Paw Paw, Michigan.

4 PHILIP MORRIS New York, N.Y.

	1981	1980	% Change
Capital Expenditures*	**329,320**	**299,300**	**10.0**
Net Sales**	3,269,000	2,939,770	12.9
Net Earnings**	114,000	133,836	−17.4
Cash Dividends Paid	250,000	199,500	25.2

New Miller Brewery in Trenton, Ohio, was completed last year, along with Seven-Up's plant in Houston, and new world headquarters in New York.

5 CPC INTERNATIONAL Englewood Cliffs, N.J.

	1981	1980	% Change
Capital Expenditures	**293,500**	**235,900**	**28.9**
Net Sales	4,343,100	4,120,300	5.4
Net Earnings	218,400	197,400	10.6
Cash Dividends Paid	91,700	81,100	13.1

The company built the largest corn wet milling plant west of the Rockies at Stockton, Cal., and a similar plant was completed at Winston-Salem, N.C.

6 A. E. STALEY Decatur, Ill.

	1981	1980	% Change
Capital Expenditures	**271,303**	**82,884**	**277.3**
Net Sales	2,006,196	1,655,992	21.1
Net Earnings	105,821	73,810	43.4
Cash Dividends Paid	19,772	16,069	23.0

Staley has completed the new 600 million pound capacity corn refining plant in Louden, Tenn., and has expanded production capacity at Lafayette, Ind., and Morrisville, Pa. corn refining plants. Construction of a soybean oil refinery in Des Moines, Iowa, and a sunflower seed processing plant in Velva, N.D. has begun. The company has also increased capacity at the Decatur, Ill. soybean oil refinery.

Ranking of Top-Spenders

Company	1981	1980	1979
Anheuser-Busch	1	1	1
Archer-Daniels-Midland	2	7	33
Coca-Cola	3	4	3
Philip Morris*	4	3	4
CPC International	5	5	11
A.E. Staley	6	19	36
Pepsico*	7	2	2
Nabisco*	8	17	22
Ralston Purina	9	20	5
General Foods	10	6	12
Beatrice Foods*	11	8	7
Consolidated Foods	12	9	14
Adolph Coors	13	14	—
Kellogg	14	12	21
Quaker Oats	15	25	40
Campbell Soup	16	10	9
H.J. Heinz	17	16	13
Dart & Kraft*	18	11	16
General Mills*	19	22	10
Hershey Foods	20	28	29
R.J. Reynolds*	21	18	25
George A. Hormel	22	31	42
Carnation	23	49	20
Seagram*	24	26	34
United Brands	25	33	31
ITT*	26	29	28
Heublein	27	23	26
Pillsbury*	28	32	6
Borden*	29	27	8
Procter & Gamble*	30	21	15
Campbell Taggart	31	35	30
Anderson Clayton	32	41	37
Pabst	33	44	45
IC Industries*	34	41	41
G. Heileman Brewing	35	37	—
Warner-Lambert*	36	36	—
Norton Simon	37	34	23
Conagra	38	42	—
Central Soya	39	—	39
Castle & Cooke	40	40	27
Foremost-McKesson*	41	45	38
Gerber	42	50	17
Tyson Foods	43	—	—
International Multifoods	44	46	47
Dr Pepper	45	47	—
The Federal Co.	46	39	43
Wm Wrigley	47	48	44
Stokely-Van Camp	48	—	—
Greyhound	49	13	18
Universal Foods*	50	—	—

*Food segments only **FE estimate for food segments

(continued on next page)

Top-Spending Food Companies . . .

All figures are in thousands-of-dollars

7 PEPSICO Purchase, N.Y.

	1981	1980	% Change
Capital Expenditures*	268,500	316,500	−15.2
Net Sales*	4,950,300	4,198,400	18.1
Net Earnings*	570,400	529,500	7.8
Cash Dividends Paid	129,944	144,886	13.0

Opened 21 new beverage plants internationally. Began construction of a beverage plant in Colonie, N.Y. and new Frito-Lay plants in Casa Grande, Ariz. and Fort Bend County, Texas.

8 NABISCO New York, N.Y.

	1981	1980	% Change
Capital Expenditures*	216,100	182,900	18.2
Net Sales	5,819,200	5,587,200	4.2
Net Earnings	266,300	234,800	13.4
Cash Dividends Paid	96,300	98,000	−2.4

Capital expenditures were for construction of a cream and milk plant in Itaperuna, Brazil, acquisition of a dessert and drink mix production plant in Vincente Lopez, Argentina, and a bakery goods warehouse in Chicago, Ill. Automated equipment was placed in the Atlanta bakery and distribution center and the Fair Lawn, N.J. distribution center.

9 RALSTON PURINA St. Louis, Mo.

	1981	1980	% Change
Capital Expenditures	189,100	203,400	−7.0
Net Sales	5,224,700	4,873,200	7.0
Net Earnings	174,800	163,000	7.0
Cash Dividends Paid	77,700	69,100	12.0

Firm's major C.E. program was $89-million for purchase of tuna boats for Van Camp segment and upgrading of tuna processing facilities.

10 GENERAL FOODS White Plains, N.Y.

	1981	1980	% Change
Capital Expenditures	186,900	154,700	20.8
Net Sales	6,601,300	5,959,600	10.8
Net Earnings	255,400	255,800	−0.2
Cash Dividends Paid	109,306	97,413	12.4

GF started construction of a new headquarters building in Rye, N.Y., and began a Jell-O Pudding Pops plant and decaffeinated coffee process improvements.

11 BEATRICE FOODS Chicago, Ill.

	1981	1980	% Change
Capital Expenditures*	177,000	154,000	15.0
Net Sales*	6,632,000	6,052,699	10.0
Net Earnings*	478,417	439,169	9.0
Cash Dividends Paid	143,455	132,881	8.0

For the most part, capital expenditures were directed at improving productivity and efficiency, although expansion into new geographic areas also was a factor.

12 CONSOLIDATED FOODS Chicago, Ill.

	1981	1980	% Change
Capital Expenditures	169,055	159,152	6.2
Net Sales	5,614,052	5,342,860	5.1
Net Earnings	140,278	127,682	9.9
Cash Dividends Paid	58,911	56,294	4.6

Opened a Douwe Egbert coffee production plant at St. Etienne, France and a new Chef Pierre frozen pie plant in Forest, Miss. Began construction on a Hollywood Brands candy plant in Centralia, Ill.

13 ADOLPH COORS Golden, Colo.

	1981	1980	% Change
Capital Expenditures	156,157	111,099	40.5
Net Sales	929,916	887,897	4.7
Net Earnings	51,970	64,977	−20.0
Cash Dividends Paid	10,503	9,632	9.0

Major projects in 1981 included continuing construction of new malthouses, waste treatment facilities, a five-story office building and expansion of beer aging capacity.

14 KELLOGG Battle Creek, Mich.

	1981	1980	% Change
Capital Expenditures	146,400	122,900	19.0
Net Sales	2,321,300	2,150,900	8.0
Net Earnings	205,400	184,400	12.0
Cash Dividends Paid	108,900	102,400	6.4

Construction of a corporate advanced technology facility in Battle Creek, Mich. was completed. Expanded operations and production capacity at the Lancaster, Pa. plant. Expanding frozen food production, distribution and warehouse facilities for Mrs. Smith's at McMinnville, Oregon and San Jose, Calif.

*Food segments only **FE estimate for food segments

15 QUAKER OATS Chicago, Ill.

	1981	1980	% Change
Capital Expenditures	136,400	112,400	21.3
Net Sales	2,599,500	2,405,200	8.1
Net Earnings	105,200	96,400	9.1
Cash Dividends Paid	36,500	32,800	11.3

Capital expenditures were for a new food and mixes production plant in Danville, Ill., a hot cereals manufacturing plant in Taipei, China and a pet food manufacturing facility near St. Etienne, France.

16 CAMPBELL SOUP Camden, N.J.

	1981	1980	% Change
Capital Expenditures	135,402	97,391	39.2
Net Sales	2,797,663	2,560,569	9.2
Net Earnings	129,717	121,655	6.9
Cash Dividends Paid	66,296	61,479	7.8

Campbell's huge (250,000 sq ft) new processing facility and distribution center in Maxton, N.C., accounts for a huge chunk of the expenditures.

17 H.J. HEINZ Pittsburgh, Pa.

	1981	1980	% Change
Capital Expenditures	128,604	98,061	31.2
Net Sales	3,568,889	2,924,774	22.0
Net Earnings	160,827	131,497	17.2
Cash Dividends Paid	58,841	48,131	22.3

Heinz expanded ketchup and barbecue sauce production capacities at Muscatine, Iowa and Fremont, Ohio. Capacity at the Ore-Ida potato factory in Plover, Wisconsin was doubled. New tuna canning equipment was installed at Terminal Island, Calif. for Star-Kist. A 1,200-ton cucumber-brining facility was opened in Portugal and a new food products plant opened in Utsunomiya, Japan.

18 DART & KRAFT Glenview, Ill.

	1981	1980	% Change
Capital Expenditures*	125,400	155,000	−19.1
Net Sales*	7,067,900	6,846,500	3.2
Net Earnings	450,300	407,300	10.6
Cash Dividends Paid	185,300	150,300	23.3

Approximately two-thirds of the capital expenditures were for improved efficiency and replacement of existing facilities; and one-third for expansion.

19 GENERAL MILLS Minneapolis, Minn.

	1981	1980	% Change
Capital Expenditures*	95,700	80,600	19.0
Net Sales*	2,514,600	2,218,800	58.0
Net Earnings*	217,700	210,500	3.0
Cash Dividends Paid	72,300	64,400	12.0

A new Tom's snack plant was opened in Perry, Fla., and one in Knoxville, Tenn., is underway. The company's overseas operations are being developed rapidly.

20 HERSHEY FOODS Hershey, Pa.

	1981	1980	% Change
Capital Expenditures	91,673	59,029	55.0
Net Sales	1,451,151	1,335,289	9.0
Net Earnings	80,362	62,055	30.0
Cash Dividends Paid	25,504	21,240	20.0

The firm's new confectionary plant in Virginia is its major capital project with a total cost of about $126-million.

21 R.J. REYNOLDS Winston-Salem, N.C.

	1981	1980	% Change
Capital Expenditures*	90,200	82,800	8.9
Net Sales*	2,334,100	2,108,600	11.0
Net Earnings	100,000	90,100	11.0
Cash Dividends Paid	290,200	254,508	14.0

Capital expenditures were used principally for the maintenance and improvement of processing facilities.

22 GEORGE A. HORMEL Austin, Tex.

	1981	1980	% Change
Capital Expenditures	82,522	55,669	49.0
Net Sales	1,433,966	1,321,966	8.5
Net Earnings	27,283	32,758	−16.7
Cash Dividends Paid	8,838	8,069	9.5

With the highest C.E. in the firm's history, Hormel opened a one million square foot slaughtering, processing and distribution facility in Austin, Minn. The company also opened a new distribution facility in Hayward, Calif. and expanded the distribution facility in Dallas. Extensive remodeling was done at the Los Angeles manufacturing plant.

*Food segments only **FE estimate for food segments

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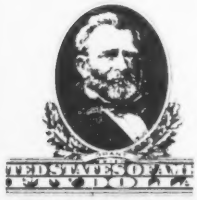


Top-Spending Food Companies . . .

All figures are in thousands-of-dollars

23 CARNATION
Los Angeles, Cal.

	1981	1980	% Change
Capital Expenditures	79,542	73,057	8.8
Net Sales	3,354,141	3,236,222	3.6
Net Earnings	172,277	151,931	13.4
Cash Dividends Paid	67,056	61,864	9.0

In the U.S., pet food, milk and instant products were emphasized in the C.E. program; 16% of the 1981 total was expended overseas. Pet food plant capacity was expanded at the Jefferson, Wisc. and St. Joseph, Missouri plants.

24 SEAGRAM
Montreal

	1981	1980	% Change
Capital Expenditures*	78,000	65,000	17.0
Net Sales*	2,772,700	2,535,000	9.4
Net Earnings*	273,600	239,700	9.0
Cash Dividends Paid	46,477	37,292	20.0

Company is building extensively in Japan and South America. The company is expanding Paul Masson's crushing and processing operations in the United States, opening a bottling hall in Scotland and a new winery in Brazil.

25 UNITED BRANDS
New York, N.Y.

	1981	1980	% Change
Capital Expenditures	71,230	47,198	51.1
Net Sales	4,058,387	3,762,560	7.9
Net Earnings	29,386	31,056	−5.4
Cash Dividends Paid	5,396	3,850	40.2

The company is consolidating its John Morrell meat division plants into fewer, more efficient units. United Brands has completed the largest cold storage and ripening facility in the Middle East. Morrell's East St. Louis facility has been converted from slaughtering and processing to distribution only, and the Arkansas City processed meat plant has been expanded.

26 ITT
New York, N.Y.

	1981	1980	% Change
Capital Expenditures*	64,000	58,000	10.3
Net Sales*	1,739,000	1,816,000	−4.2
Net Earnings*	31,000	16,000	32.6
Cash Dividends Paid	207,025	167,846	23.3

Construction of bakery products plants in Hodgkins, Ill., and Ogden, Utah continues for Continental Baking Co.

27 HEUBLEIN
Farmington, Conn.

	1981	1980	% Change
Capital Expenditures	63,984	73,654	−13.0
Net Sales	2,050,121	1,921,879	6.7
Net Earnings	88,379	77,411	14.2
Cash Dividends Paid	38,036	34,566	10.0

Capital expenditures went towards the completion of the expansion of California wine facilities and new Kentucky Fried Chicken stores.

28 PILLSBURY
Minneapolis, Minn.

	1981	1980	% Change
Capital Expenditures*	60,900	52,400	13.9
Net Sales*	1,599,800	1,490,500	6.8
Net Earnings*	127,800	88,200	31.0
Cash Dividends Paid	38,700	33,500	13.2

Major investments were made to expand commodity handling, rice milling and improve flour milling productivity. R + D has been expanded greatly in the past several years.

29 BORDEN
New York, N.Y.

	1981	1980	% Change
Capital Expenditures*	46,914	49,777	−5.6
Net Sales	4,415,174	4,595,795	−3.9
Net Earnings	159,939	147,485	8.4
Cash Dividends Paid	59,110	57,976	2.0

Firm opened a new snack food plant in Spartanburg, S.C., completed a $6 million expansion of a hamburger bun line in Germany and completed a new production line at Creamettes plant in Minneapolis, Minn.

30 PROCTER & GAMBLE
Cincinnati, Ohio

	1981	1980	% Change
Capital Expenditures*	44,000	81,000	−45.6
Net Sales*	2,192,000	2,313,000	−5.2
Net Earnings**	44,000	44,000	—
Cash Dividends Paid	314,000	281,000	11.7

Company is planning higher levels of C.E. in the future, i.e. a new Folger's vacuum and instant coffee plant in New Orleans.

*Food segments only **FE estimate for food segments

31 CAMPBELL TAGGART
Dallas, Texas

	1981	1980	% Change
Capital Expenditures	43,429	45,732	−5.0
Net Sales	1,257,514	1,113,147	13.0
Net Earnings	41,684	36,247	15.0
Cash Dividends Paid	14,828	13,311	11.0

Machinery and equipment accounted for about $25 million of the capital expenditures; about $9 million was spent for land and buildings; and about $9 million for transportation vehicles.

32 ANDERSON CLAYTON
Houston, Texas

	1981	1980	% Change
Capital Expenditures	41,438	30,310	24.0
Net Sales	1,929,647	1,703,102	13.3
Net Earnings	51,399	52,749	−2.6
Cash Dividends Paid	14,927	14,651	1.8

C.E.'s are at an all-time high for firm. Expenditures went for increasing production volume, cost reductions and equipment replacement.

33 PABST
Milwaukee, Wisc.

	1981	1980	% Change
Capital Expenditures	40,569	28,574	42.9
Net Sales	811,523	853,441	−4.9
Net Earnings	(13,206)	21,423	−161.6
Cash Dividends Paid	3,273	3,269	—

Capital expenditures includes properties acquired under capital leases.

34 IC INDUSTRIES
Chicago, Ill.

	1981	1980	% Change
Capital Expenditures*	37,800	33,000	14.5
Net Sales*	1,545,000	1,504,100	2.7
Net Earnings**	43,000	34,400	20.0
Cash Dividends Paid	58,700	55,200	6.3

Major increases in plant investment were made at Pet facilities around the country. Whitman has undertaken a multi-year project to expand capacity.

35 G. HEILEMAN BREWING
La Cross, Wisc.

	1981	1980	% Change
Capital Expenditures	37,493	38,724	−3.2
Net Sales	931,940	840,784	10.8
Net Earnings	40,230	34,683	16.0
Cash Dividends Paid	9,164	7,664	18.0

Major projects include increasing capacity and environmental projects at La Cross, Wisc.

36 WARNER-LAMBERT
Morris Plains, N.J.

	1981	1980	% Change
Capital Expenditures*	36,000	41,000	−12.0
Net Sales*	1,001,000	903,000	11.0
Net Earnings**	80,600	75,764	6.0
Cash Dividends Paid	106,759	105,142	1.5

The company opened a chewing gum plant in Egypt and expanded production in Portugal. Entenmann's bakery production capacity was expanded.

37 NORTON-SIMON
New York, N.Y.

	1981	1980	% Change
Capital Expenditures*	35,966	45,891	−21.4
Net Sales*	1,418,000	1,416,800	0.1
Net Earnings*	127,500	113,400	12.4
Cash Dividends Paid	48,092	51,462	−6.5

Capital expenditures went for cost reduction and energy conservation programs.

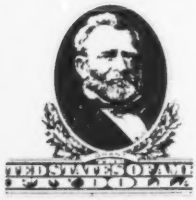
38 CONAGRA
Omaha, Neb.

	1981	1980	% Change
Capital Expenditures	35,893	30,344	18.2
Net Sales	1,376,808	842,905	63.0
Net Earnings	27,071	18,515	46.0
Cash Dividends Paid	9,237	7,730	32.5

Company plans to expand flour milling operations in four operations.

*Food segments only **FE estimate for food segments

(continued on next page)



Top-Spending Food Companies . . .

All figures are in thousands-of-dollars

39 CENTRAL SOYA
Fort Wayne, Ind.

	1981	1980	% Change
Capital Expenditures	35,157	41,162	−14.6
Net Sales	1,975,042	1,744,445	13.2
Net Earnings	19,901	34,758	−42.8
Cash Dividends Paid	12,768	12,284	4.0

Company completed modernizing domestic soybean processing operation in Decatur, Ill.

40 CASTLE & COOKE
Honolulu

	1981	1980	% Change
Capital Expenditures	34,565	40,000	13.7
Net Sales	1,794,915	1,676,000	1.0
Net Earnings	42,284	32,000	3.2
Cash Dividends Paid	20,280	19,500	4.0

Capital expenditures reached their peak in 1978 at $117 and have declined to a level which approximates depreciation.

41 FOREMOST-MCKESSON
San Francisco, Calif.

	1981	1980	% Change
Capital Expenditures*	32,238	31,057	3.8
Net Sales*	1,833,249	1,689,715	8.0
Net Earnings*	75,429	62,365	21.0
Cash Dividends Paid	32,400	26,360	23.0

Capital expenditures went for the expansion of the bottled water business and the opening of a pasta research laboratory in Dublin, California.

42 GERBER
Fremont, Mich.

	1981	1980	% Change
Capital Expenditures	28,755	22,075	30.3
Net Sales	631,017	601,986	4.8
Net Earnings	30,843	29,716	12.3
Cash Dividends Paid	15,492	13,852	11.8

C.E. mainly for renewal and replacements in food manufacturing facilities.

43 TYSON FOODS
Oklahoma City, Okla.

	1981	1980	% Change
Capital Expenditures	25,321	8,938	183.3
Net Sales	501,716	390,318	28.5
Net Earnings	1,340	592	126.0
Cash Dividends Paid	616	616	—

In addition to several acquisitions, company converted its Cumming, Ga., dri-pak processing plant into a Tyson Country Fresh chill-pak plant, and completed construction of a new feed mill in Nashville, Ark.

44 INTERNATIONAL MULTI-FOODS
Minneapolis, Minn.

	1981	1980	% Change
Capital Expenditures	23,178	23,634	−2.0
Net Sales	1,147,659	1,088,110	5.0
Net Earnings	33,153	27,203	22.0
Cash Dividends Paid	11,625	10,385	12.0

Plant capacity is being increased at a Venezuela flour mill and a Canadian bakery mix plant. Increased durum milling capacity in St. Paul, Minn.

45 DR PEPPER
Dallas, Texas

	1981	1980	% Change
Capital Expenditures	22,994	24,757	−7.1
Net Sales	363,966	333,165	9.2
Net Earnings	29,396	26,543	10.8
Cash Dividends Paid	15,772	14,545	8.4

Major project was work on the company's new production and distribution facility in Houston, Tex. Opened a Canada Dry bottling plant in Lagos, Nigeria.

46 THE FEDERAL CO.
Memphis, Tenn.

	1981	1980	% Change
Capital Expenditures	19,850	35,061	−43.4
Net Sales	1,104,878	977,849	13.0
Net Earnings	20,121	9,653	108.4
Cash Dividends Paid	10,427	9,758	6.9

A major project was the completion of National Byproducts renovation of its Little Rock, Ark. facility.

*Food segments only **FE estimate for food segments

47 WM. WRIGLEY
Chicago, Ill.

	1981	1980	% Change
Capital Expenditures	19,400	22,807	−14.9
Net Sales	607,834	557,632	9.0
Net Earnings	28,431	30,689	−7.4
Cash Dividends Paid	17,638	16,456	7.3

Capital expenditures went for normal replacement and modernization of existing equipment.

48 STOKELY-VAN CAMP
Indianapolis, Ind.

	1981	1980	% Change
Capital Expenditures	16,953	21,305	−25.3
Net Sales	564,956	541,528	4.0
Net Earnings	9,031	11,431	−21.0
Cash Dividends Paid	5,603	6,074	−7.7

Company is expanding vegetable oil refinery in Kearney, N.J.

49 GREYHOUND
Phoenix, Ariz.

	1981	1980	% Change
Capital Expenditures*	16,395	12,941	26.7
Net Sales*	2,302,241	2,464,414	−6.6
Net Earnings*	9,006,000	(4,396)	269.3
Cash Dividends Paid	54,136	53,171	2.0

Capital expenditures have been reduced to some extent by obtaining equipment and other property under operating leases.

50 UNIVERSAL FOODS
Milwaukee, Wis.

	1981	1980	% Change
Capital Expenditures*	15,331	10,956	39.9
Net Sales*	435,776	380,242	14.6
Net Earnings*	39,403	30,712	28.3
Cash Dividends Paid	6,714	6,489	3.5

Company funded major expansion of yeast plant production capacity at Milwaukee and Belle Chasse, La. Ongoing expansion for Cedar Rapids, Iowa bottling facility and the Livingston, Calif. onion and garlic plant.

*Food segments only **FE estimate for food segments

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